

## REMARKS

Claims 1-13 are pending in the application. It is gratefully acknowledged that Claims 4-6 and 11-13 have been objected to as being dependent upon a rejected base claim but would be allowable if rewritten in independent form to include all of the limitations of the base claim and any intervening claims. The Examiner has rejected Claims 1-3 and 7-10 under 35 U.S.C. §103(a) as being unpatentable over Jafarkhani et al. (U.S. Patent 6,125,149).

Regarding the rejections of independent Claims 1 and 7 under §103(a), the Examiner states that Jafarkhani et al. discloses all of the elements recited in the claims. Applicants respectfully disagree. Both independent Claims 1 and 7 recite the element of the intervals occupying a range  $m \times 2^l$  ( $l$  is a positive integer) where the transmission signal level from the transmitter is  $m$ . This element is neither disclosed nor taught by Jafarkhani et al. The Examiner relies on Jafarkhani et al., col. 7, lines 21-34, but this section does not disclose the recited element. Col. 7, lines 22-24 of Jafarkhani et al. states, "the selected quantizer levels...could be selected to divide the signal span equally." The Examiner states that in view of Jafarkhani et al. it would have been obvious to set the intervals based on the transmission signal level from the transmitter. Again Applicants respectfully disagree. Nowhere in Jafarkhani et al. is there a teaching or suggestion to base the intervals on the transmission level from the receiver.

The Examiner refers to col. 6, lines 34-38 of Jafarkhani regarding an iterative decoder as recited in Claim 1 of the present application, col. 7, lines 21-34 of Jafarkhani et al. regarding the first step of Claim 1, and col. 5, lines 36-38 of Jafarkhani et al. regarding the second step of Claim 1. Although the Examiner alleges that Jafarkhani et al. disclosed all iterative procedures recited in Claim 1 of the present application, the iterative decoder of the present application repeatedly performs a decoding operation by an inner component, whereas Jafarkhani et al. discloses an iterative process by performing coding and decoding operation by turns. That is, the present application discloses that the decoding operation is made within the iterative decoder, however, Jafarkhani et al. discloses that a coding operation as well as a decoding operation are performed through a coder and a decoder, not within the decoder as recited in the claims of the present application.

More specifically, the first step of Claim 1 of the present application recites dividing received signal levels into predetermined intervals, said intervals occupying a range  $2^l$  times

greater than a transmission signal level range of a transmitter. On the other hand, the corresponding part of Jafarkhani et al. comprises the step of dividing into predetermined intervals between two levels selected from level sequences corresponding to a quantization level so that the number of selectable sequences can be increased.

In light of this point, it appears that the Examiner is reading that Jafarkhani et al. is similar to the present application in that a range of transmission signal level and the number of selectable level sequences are doubled. However, in the present application, a range of quantization level is twice expanded, whereas Jafarkhani et al. twice increases the number of selectable transmission signal level sequence and thus the range of quantization level is varied according to selection of transmission signal level sequence, which is different from that which is recited in the claims of the present application.

In addition, regarding the Examiner's opinion that it would have been obvious to one of ordinary skill in the art at the time the invention was made that the quantization ranges could have been chosen to occupy  $2^n$  times, the following arguments are presented. The claims of the present application recite a decoder using an iterative decoding scheme and the input/output of the decoder is based on soft-input/soft-output (SISO). Accordingly, confidence measurement as well as polarity should be considered in the design of an input signal of a decoder using an iterative decoding scheme. That is, the output signal of the SISO iterative decoder to be fed back should be not a hard-decision signal (high or low) but a soft decision signal. However, signals above/below the level of a transmission signal range are already truncated during analog-to-digital conversion in the conventional quantization method, and thereby the conventional quantization method can cause a seriously lowered performance level in an iterative decoder. Thus, to solve above problem, the claims of the present application provide that each of the signals above/below a transmission level inputted to an iterative decoder is given a different level, that is, the quantization range is extended above/below a transmission level. Therefore, it is one aspect of the present invention to provide a method for differentiating an iterative decoder input signal. However, Jafarkhani et al. discloses dividing between two levels selected from level sequences and increasing the number from selectable level sequences. Hence, it is not believed that in order to obtain the above aspect, one of ordinary skill in the art at the time the invention was made, could have chosen the quantization ranges to occupy  $2^n$  times.

Based on at least the foregoing arguments, withdrawal of the rejections of Claims 1 and 7 is respectfully requested.

Independent Claims 1 and 7 are believed to be in condition for allowance. Without conceding the patentability per se of dependent Claims 2, 3 and 8-10, these are likewise believed to be allowable by virtue of their dependence on their respective amended independent claims. Accordingly, reconsideration and withdrawal of the rejections of dependent Claims 2, 3 and 8-10 is respectfully requested.

Accordingly, all of the claims pending in the Application, namely, Claims 1-13, are believed to be in condition for allowance. Should the Examiner believe that a telephone conference or personal interview would facilitate resolution of any remaining matters, the Examiner may contact Applicant's attorney at the number given below.

Respectfully submitted,



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